

Remarks

In response to the Office Action mailed June 25, 2004, the Applicants respectfully request reconsideration of the pending claims based on the above amendments and the following remarks. The pending claims are believed to be in allowable condition.

As noted above, paragraphs 010, 011, 032, 034, 038, 048, 055, 060 and 062 have been amended in the Specification. Claims 1, 3, 5, 7, 9, 11, 13, 15 and 17 have also been amended and claims 4, 10 and 16 have been canceled. The Specification has been amended to clarify the meaning of the terms “maximum target limit,” “targets” and “target values” in the context of the disclosure and to correct typographical errors and other informalities noted by the Examiner in the Office Action of June 25, 2004. Support for these amendments may be found in paragraph 38, and in paragraphs 3 and 6 in related U.S. Patent Application No. 09/622,976 which is incorporated into the present application by reference. Claims 1, 7 and 13 have been amended to clarify that the “platform locations” are “surface platform locations.” Claims 3, 9, and 15 have been amended to clarify that a maximum target limit is determined by applying at least one multiplier to approximate an average number of targets to assign to each of the additional platform locations and receiving a user-supplied number of slots for each of the additional platform locations, each target comprising a drilling location for a well, and wherein the one or more target values comprise numerical values associated with the distribution of a property of interest associated with each target, the property of interest including at least one of porosity and oil saturation. Claims 5, 11, and 17 have been amended to clarify that the determination that a new location is better than an original location comprises determining at least one of the

following: determining that more targets may be reached from the new location than from the original location, each target representing a drilling location for a well; determining that the same number of targets may be reached from the new location with less total distance; and determining that the number of targets reachable from the new location have a higher cumulative target value. Support for the claim amendments may be found in paragraphs 36-39, and in paragraphs 3 and 6 in related U.S. Patent Application No. 09/622,976 which is incorporated into the present application by reference. No new matter has been added by the amendments to the Specification and the claims.

Claims 1-18 are currently pending in the application. The disclosure in the Specification is objected to because of various informalities. Claims 3-6, 9-12 and 15-18 are rejected under 35 U.S.C. § 112, second paragraph. Claims 7-12 are rejected under 35 U.S.C. § 101. Claims 1-4, 7-10 and 13-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cullick et al. (U.S. Patent 6,549,879, hereinafter “Cullick”) in view of Tubel et al. (U.S. Patent 6,006,832, hereinafter “Tubel”), and further in view of Brunet (U.S. Patent 6,315,054). Claims 5-6, 11-12 and 17-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cullick in view of Tubel, and further in view of Brunet and Lo et al. (U.S. Patent 5,757,663).

Specification

The disclosure is objected to because of various informalities in paragraphs 10, 11, 32, 34, 38, 48, 55, 59, 60, and 62. In the above section entitled “Amendments to the Specification,” paragraphs 10, 11, 32, 34, 38, 48, 55, 60, and 62 have been amended to correct the informalities. It should be noted that paragraph 59 was not amended since the meaning of this paragraph is

made clear by virtue of amended paragraphs 10 and 38. In particular, paragraphs 11, 34, and 62 have been amended to correct grammatical errors noted by the Examiner, paragraphs 32, 48, and 55 have been amended to include the application number of the referenced U.S. Patent Application, and paragraphs 10, 38, 59, and 60 have been amended to clarify the meaning of the terms “maximum target limit,” “targets” and “target values” in the context of the disclosure. For instance, as used in the disclosure, a “target” represents a reservoir locations for drilling a well, a “maximum target limit” is determined by applying at least one multiplier to approximate an average number of targets to assign to additional platform locations and by receiving a user-supplied number of slots for each of the additional platform locations, and a “target value” is a numerical value associated with the distribution of a property of interest associated with a reservoir (such as the distribution of porosity or oil saturation). Based on the aforementioned amendments to the disclosure, it is respectfully submitted that the Examiner’s objection to the disclosure should be withdrawn.

Claim Rejections—35 U.S.C. §112, second paragraph

Claims 3-6, 9-12 and 15-18 are rejected as being indefinite. Claims 4, 10, and 16 have been canceled. Regarding claims 3, 9, and 15, these claims have been amended to clarify the meanings of the terms “maximum target limit,” and “target values.” Claims 5, 11 and 17 have been amended to clarify that the determination that a “new location is better than an original location” includes determining at least one of the following: determining that more targets may be reached from the new location than from the original location, determining that the same number of targets may be reached from the new location with less total distance, and determining that the number of targets reachable from the new location have a higher cumulative target value. Based on the aforementioned amendments and discussion, it is respectfully submitted that the rejections of claims 3, 5, 9, 11, 15 and 17 under 35 U.S.C. §112, second paragraph should be withdrawn. It is also submitted that the rejections of claims 6, 12 and 18 should be withdrawn based on their dependency on the aforementioned claims.

Claim Interpretations

Regarding the Examiner’s interpretation of claims 3, 4, 9, 10, 15 and 16, Applicants submit that the interpretation of these claims should be based on the amendments made to these claims, referenced above.

Claim Rejections—35 U.S.C. §101

Claims 7-12 are rejected for claiming non-statutory subject matter. Claim 10 has been canceled. As noted above in the section entitled “Amendments to the Claims,” claims 7-9 and

11-12 have been amended in conformity with the Examiner's suggestions. Accordingly, the Examiner's rejections of claims 7-12 should be withdrawn.

Claim Rejections—35 U.S.C. §103

Claims 1-4, 7-10 and 13-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cullick in view of Tubel, and further in view of Brunet. Claims 4, 10 and 16 have been canceled. Amended independent claim 1 specifies a method of generating optimized platform location sets. The method includes selecting a set of surface platform locations, determining additional surface platform locations to add to the set of surface platform locations, and determining an optimum surface location for each surface platform location in the set of surface platform locations.

Cullick discloses a two-stage method for determining well locations in a 3D reservoir model. The first stage includes determining well locations for vertical wells while the second stage includes determining well location for horizontal or deviated wells. In the first stage, a 3D-reservoir quality volume is used to generate a 2D quality map. Each cell in the 2D array may be considered as a potential site where a well can be drilled. The method includes selecting a subset of the potential locations that will maximize the cumulative value of reservoir property locations while ensuring that the planar distance between the selected sites is over a certain specified minimum to avert well interference. The second stage includes determining well trajectories that connect maximum reservoir pay values while honoring configuration constraints. In both stages, the method includes optimizing a static measure based on a proxy value such as porosity, net

pay, permeability, permeability-thickness, or pore volume. See Col. 3, lines 47-67 through Col. 4, lines 1-12 and Col. 9, lines 4-59.

As noted in the Office Action, Cullick fails to teach selecting a set of surface platform locations or determining additional surface platform locations to add to the set of surface platform locations. It is also submitted that Cullick further fails to teach determining an optimum surface location for each surface platform location in the set of surface platform locations since this determination must include any previously determined additional surface platform locations. As discussed, *supra*, and as admitted in the Office Action, Cullick fails to teach determining additional surface platform locations.

In the Office Action it is alleged that Brunet cures the deficiencies of Cullick by teaching a processor operable to select a set of platform locations and determine additional platform locations to add to the set of platform locations (Col. 2, lines 19-20). The Applicants respectfully disagree with this interpretation of Brunet. As noted in the Office Action, one of the goals of Brunet is to reduce the number of platform locations (Col. 2, lines 19-20 and Fig. 4). Brunet teaches that this may be accomplished by creating a junction in a wellbore (i.e., below the surface) (Col. 13, lines 45-54). Moreover, Brunet fails to teach, disclose, or suggest determining additional surface platform locations to add to a set of surface platform locations as recited in amended independent claim 1. As noted above, Brunet only teaches that a junction may be created from a wellbore casing below the surface of the earth from a single platform location.

The Office Action also cites Tubel for allegedly teaching the determination of an optimum location for each platform location in the set of platform locations. As noted in the

Office Action, Tubel teaches a set of platforms, each associated with a plurality of wells (See Fig. 1). Tubel, however, like Cullick and Brunet, fails to teach, disclose, or suggest determining additional surface platform locations to add to a set of surface platform locations and determining an optimum surface location for each surface platform location in the set of surface platform locations, as recited in amended independent claim 1. Therefore, in view of the foregoing, amended independent claim 1 is allowable over Cullick, Brunet and Tubel, and the rejection of claim 1 should be withdrawn.

Amended independent claims 7 and 13 specify similar features as amended independent claim 1, discussed above. As discussed above, Cullick, Brunet and Tubel fail to teach, disclose, or suggest each of the features specified in amended independent claim 1. Therefore, in view of the foregoing, amended independent claims 7 and 13 are allowable over Cullick, Brunet and Tubel, and the rejections of these claims should also be withdrawn.

Claims 2-3, 8-9, and 14-15 depend from amended independent claims 1, 7 and 13 respectively and thus are allowable for at least the reasons stated above with respect to claim 1 as well as the additional features set forth therein. For example, dependent claims 3, 9 and 15 specify that determining additional platform locations to add to the set of platform locations includes adding the additional platform locations to the set and determining whether the additional platform locations are desirable, based on at least one of a maximum target limit, a drilling distance, and one or more target values associated with the additional platform locations, wherein the maximum target limit represents a maximum number of drilling locations which are reachable by the additional platform locations and the one or more target values comprise

numerical values associated with the distribution of a property of interest associated with the drilling locations, the property of interest including at least one of porosity and oil saturation. Based on the discussion above, none of the cited references teach, suggest or disclose the aforementioned features. Accordingly, the rejections of dependent claims 2-3, 8-9, and 14-15 should also be withdrawn.

Claims 5-6, 11-12 and 17-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cullick in view of Tubel, and further in view of Brunet and Lo. Claims 5-6, 11-12 and 17-18 depend from amended independent claims 1, 7 and 13 respectively and thus include at least the same features as claims 1, 7 and 13 as well as the additional features set forth therein. As discussed above, Cullick, Brunet, and Tubel fail to teach, disclose or suggest each of the features of claims 1, 7 and 13. Lo, relied upon to cure the deficiencies of the aforementioned references, also fails teach any of the features of claims 1, 7, and 13. Lo teaches a method and computer software system for identifying and quantifying connectivity of regions within subsurface reservoir formations selected pay criteria to well perforations, thereby enabling estimate of the connected reservoir volume of hydro carbons available for commercial recovery (Col. 2, lines 54-60). Therefore, claims 5-6, 11-12 and 17-18 are allowable based at least on their dependency on amended independent claims 1, 7 and 13 as discussed above and the rejections of these claims should be withdrawn.

Conclusion

In view of the foregoing amendments and remarks, this application is now believed to be in a condition for allowance. A notice to this effect is respectfully requested. If the Examiner

believes, after this amendment, that the application is not in condition for allowance, the Examiner is invited to call directly Applicants' attorney at the number listed below.

If any additional fees are required for the timely consideration of this application, please charge Deposit Account Number 13-2725.

Respectfully submitted,

MERCHANT & GOULD

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